BERNALILLO COUNTY, NEW MEXICO
MS4 ANNUAL REPORT
May 11, 2011 – July 31, 2011

Check box if this is a new name, address, etc. ☐

A. PERMITTEE INFORMATION

Permit Number:	NMR040000, NOI Tracking No. NMR04A008
Permittee:	Bernalillo County
Mailing Address:	One Civic Plaza (2400 Broadway SE)
City, State and Zip Code:	Albuquerque, NM 87102
Phone Number:	(505) 224-1673

Have any areas been added to the MS4 due to annexation or other legal means? ☐YES ☒NO
If YES, include updated map.

B. REPORTING PERIOD May 11, 2011 to June 30, 2011

C. PROGRAM AREAS

1. Implementation status.

a. During the current reporting period, Bernalillo County continued to implement the elements of its April 1, 2007 Storm Water Management Plan (SWMP). Appendix A to this report summarizes the status of each BMP under each Minimum Control Measure. In general, Bernalillo County was moderately successful in implementing BMPs for each of the six Minimum Control Measures during FY2011. Modifications to some BMPs may be necessary, as noted in the *FY2012 Improvements/Follow-Up* columns in Appendix A.

b. No SWMP elements were changed or refined since the Notice of Intent was filed.

c. Status of Measurable Goals. Please refer to Appendix A for a status report for each measurable goal. Progress was made on most measurable goals during FY2011, though some require increased attention and/or modification for the FY2012 reporting year. Please see comments in the *FY2012 Improvements/Follow-Up* columns in Appendix A.

2. Overall compliance with permit conditions.

a. Assessment of the appropriateness of the identified BMPs. The BMPs selected by Bernalillo County (as listed in the Appendix A) are generally appropriate for achieving compliance with Minimum Control Measure requirements. For those BMPs that may need adjustment, please refer to the *FY2012 Improvements/Follow-up* columns in each of the tables in Appendix A.

b. Progress towards achieving the statutory goal of reducing the discharge of pollutants to the Maximum Extent Practicable (MEP). Bernalillo County, in cooperation with the US Geological Survey, has since 2004, monitored storm water quality at each of its MS4 outfalls. As illustrated in Appendix B, the results to date have not demonstrated verifiable reductions in pollutant concentrations since monitoring was initiated. However, considering limitations in staff and financial resources, Bernalillo County asserts that it has implemented programs to reduce the discharge of pollutants to the maximum extent practicable during FY2011.

3. Results of information collected and analyzed, if any, during the reporting period, including any monitoring data used to assess the success of the program at reducing the discharge of pollutants to the MEP.

Appendix A to this report summarizes programmatic metrics gathered during FY2011 by Bernalillo County, as well as analytical assessment statements, for each applicable BMP.

Appendix B to this report summarizes water quality data collected by Bernalillo County form each of its storm water outfalls since 2004. Pursuant to §5.6.1.2 of Permit No. NMR04000, Appendix B presents results of monitoring for pollutants of concern in the middle Rio Grande. The Albuquerque reach of the middle Rio Grande is listed as impaired for *E. coli*, PCBs in fish tissue, dissolved oxygen depleting substances and temperature in the *2010-2012 State of New Mexico §303(d)/§305(b) Integrated Report*. Appendix B includes storm water quality monitoring results for biochemical oxygen demand (BOD) and chemical oxygen demand (COD) (in response to the dissolved oxygen impairment); *E. coli* (in response to the *E. coli* impairment); and polychlorinated biphenyls (in response to the PCBs in fish tissue impairment).

For BOD and COD, concentrations are similar in stormwater samples collected at each of the four outfalls owned and operated by Bernalillo County, and show little change over six years of monitoring.

For *E. coli*, the concentration in the single storm event at the Sanchez Farm storm water facility in 2009 was noticeably higher than concentrations in stormwater samples collected during 2009-2010 at the other three Bernalillo County storm water facilities. The higher *E. coli* result observed at Sanchez Farm may be attributable to wildlife use of the constructed wetlands facility at that facility. While concerns about laboratory methodology preclude inclusion of pre-2009 *E. coli* results in this report, it is important to note that the dataset indicates significant reductions in *E. coli* concentrations by the passive sediment removal structure and constructed wetlands at the Sanchez Farm facility.

For PCBs, concentrations in sediments collected in 2010 and 2011 from the area surrounding each storm water outfall indicated that PCB concentrations in Bernalillo County stormwater have historically exceeded water quality criteria for the Rio Grande (Appendix B). Samples collected at a

control location unaffected by urban runoff (Embudo Canyon) showed no detectable PCBs. Notably, however, additional sampling at the Sanchez Farm facility illustrated that the passive sediment removal structure and constructed wetlands at that facility reduce PCB concentrations in storm water by over 95%.

Stormwater temperature monitoring began in FY2011, and only five results have been acquired to date, as shown in the following table.

Sample Location	Sample Date	Result	Units
Alameda Outfall	12/16/2010	10	Celsius
Paseo del Norte Outfall	12/16/2010	10	Celsius
Adobe Acres Outfall	10/21/2010	17	Celsius
Adobe Acres Outfall	12/16/2010	10	Celsius
Sanchez Farm Outfall	12/16/2010	10	Celsius

In addition to the analytes described above, Bernalillo County has voluntarily monitored several other pollutants in stormwater outfalls since 2004. Of particular interest has been a comparison of stormwater quality between the Sanchez Farm facility, where stormwater is treated with a passive sediment removal structure and constructed wetland, and the Adobe Acres facility, where land use is similar to that at Sanchez Farms but where no stormwater treatment is provided. The comparative table in Appendix B illustrates that, on average, the Sanchez Farm facility improves stormwater quality relative to the untreated Adobe Acres facility.

In accordance with §5.6.1.1 of MS4 Permit No. NM04000, attached as Appendix C to this report is the Bernalillo County proposed monitoring and assessment plan for FY2012. The plan was developed in cooperation with the US Geological Survey and includes monitoring for each of the analytes summarized in Appendix B, except PCBs, as well as stormwater temperature and several additional analytes. Further PCB monitoring will be pursued depending upon available funding.

4. **Brief summary of storm water activities you plan to undertake during the next reporting cycle (including an implementation schedule).**

Please refer to the *FY2012 Improvements/Follow-Up* columns in each of the tables included in Appendix A to this report for descriptions of storm water activities planned by Bernalillo County during the next reporting cycle. Specific Minimum Control Measures that will receive increased attention during FY2012 are public involvement, illicit discharge detection and elimination, and pollution prevention/good housekeeping for municipal operations.

5. **Proposed changes to each program area.**

a. Changes to BMPs. Please refer to the *FY2012 Improvements/Follow-Up* columns in each of the tables included in Appendix A to this report for descriptions of BMP modifications proposed for each Minimum Control Measure.

b. Changes to Measurable Goals. Please refer to the *FY2012 Improvements/Follow-Up* columns in each of the tables included in Appendix A to this report for descriptions of measurable goals modifications proposed for each Minimum Control Measure.

6. **Statement, if not included in previous reports or application, that you are relying on another government entity to satisfy some of your permit obligations (if applicable).**

   Bernalillo County participates with six other local storm water management agencies in the Middle Rio Grande Stormwater Quality Team (MRGSQT). Because the MRGSQT was organized to leverage public outreach and education investments by the seven participants, Bernalillo County relies on the Team for a portion of its public education and outreach permit obligations. As a member of MRGSQT, Bernalillo County contributes $10,000 per year to support the cooperative public outreach effort. Please see www.keeptheriogrand.org for details about MRGSQT.

7. **A summary of the number and nature of inspections and formal enforcement actions performed.**

   During FY2012, Bernalillo County conducted 24 on-site inspections of 16 construction sites for which storm water pollution prevention plans had been approved. One compliance problem was identified, and was resolved without the need for formal enforcement action. It is important to note that the Bernalillo County Public Works Division has drafted an amendment to Chapter 38, Article III (Flood Control) of the County Ordinances, specifically addressing enforceable prohibitions against illicit pollutant discharges to the County MS4. The draft ordinance will be presented during FY2012 to the Bernalillo County Board of Commissioners for consideration. The draft ordinance amendment is attached as Appendix D to this report.

8. **Documentation on compliance with public access, review, and comment provisions of the permit.**

   Bernalillo County has developed an informational webpage about its stormwater quality program (www.bernco.gov/stormwater). On the webpage, the Bernalillo County SWMP, all stormwater annual reports, and links to online information about stormwater regulations are included. In addition, contact information is provided for the Bernalillo County Water Resources Planner who is responsible for implementing the MS4 Phase 2 permit requirements.

   This FY2011 Annual Report was posted on the Bernalillo County webpage as soon as it was approved by Bernalillo County Public Works Division management, with a request for public comment on the report. If significant public comments are received, Bernalillo County will submit to EPA a revised annual report for FY2011.

D. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Tom Zdunek, County Manager — Date Signed: 9/27/11

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APPENDIX A

BEST MANAGEMENT PRACTICES SUMMARY AND STATUS

Legend for Responsible Departments:

AC	Animal Control
EH	Office of Environmental Health
FFM	Fleet and Facilities Management
O&M	Operations and Maintenance
PR	Parks & Recreation
SD	Storm Drainage Maintenance
SW	Solid Waste
TS	Technical Services (Development Review & Engineering)
WR	Water Resources
ZBP	Zoning, Building & Planning

PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

			Responsible Dept											
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
PUBLIC EDUCATION AND OUTREACH	Educate the general public on storm water issues via appropriate media, including brochures, flyers, pony panels, etc.	Promote better public awareness of stormwater quality issues as part of the public education and outreach requirements of the permit.									X		Distribute information to the public via civic events, environmental fairs, office distribution, etc.	Web page was updated June 2011. 8 billboard ads purchased for mid-June to end of July 2011. 1250 "Discover Stormwater" workbooks purchased from Project WET. 1000 each of EPA "After the Storm" and "Make Your Home the Solution" brochures printed with BC logo.	Track distribution of brochures and activity books more accurately.
	Educate the general public on storm water issues via appropriate television and radio broadcast.	Promote better public awareness of stormwater quality issues as part of the public education and outreach requirements of the permit.									X			Radio time purchased for mid-June through end of July 2011. Approximately 10 30-second ads per week on each of three stations. Total media buy $20,000.	Develop measurable metric.
	Storm drains will be marked to indicate that they drain to the river.	Promote better public awareness of stormwater quality issues as part of the public education and outreach requirements of the permit.						X					Affix storm drain markers to new county infrastructure.	0 storm drain markers were affixed to new infrastructure. This was an oversight and will be corrected during the current fiscal year.	Reactivate storm drain markers program and affix at least 50 markers by June 30, 2012.
	Inform pet owners and pet related business of impact of pet waste on storm water.	Promote better public awareness of stormwater quality issues as part of the public education and outreach requirements of the permit.	X										Approximately 6000 licenses/permits per year. The application will contain information on the impact of pet waste.	No information was distributed during FY2011.	Meet with animal control management before December 31, 2011 and arrange for storm water quality information distribution. Meeting request sent by email 8/30/2011.
	Septic System/Alternative Systems (Training and Outreach).	Certification of all waste water evaluators in state (200) and educate public on proper septic system maintenance.		X								X	Number of waste water evaluators receiving certification and number of flyers/brochures distributed to public.	To date there are 11 evaluators listed as registered on site sewage treatment inspectors.	Continue evaluator registrations. Track distribution of brochures more accurately. Complete, By December 31, 2011, a joint septic waste management outreach program with Ciudad Soil & Water Conservation District.
	Inform restaurant owners of impact of improper disposal of grease and oil on storm water.	Promote better public awareness of stormwater quality issues as part of the public education and outreach requirements of the permit.		X								X	Approximately 450 permits are issued to restaurant owners per year. Permit will include information on BMPs for proper disposal of grease and oil.	For FY 2011 there are approximately 450 establishments that are permitted and required to identify a method of disposal for grease and oil, some of these use a grease trap apparatus others are required to have a safe and secure container for disposal.	Review permit language and modify if necessary by June 30, 2012 to include information on BMPs for proper disposal of grease and oil.
	Provide drop-off center for Household Hazardous Waste	To prevent the improper disposal of household hazardous waste and to notify the public of the impact of improper disposal on stormwater.		X					X					Jointly-funded program with City of ABQ -> periodic updates about number of County residents using.	Develop measurable metric. Continue cosponsored hazardous waste drop-off program with City of Albuquerque through June 30, 2012.
	Provide information on stormwater quality and BMPs to the public on the County Webpage.	Maintain Stormwater Quality Information on the County website.									X		Number of visitors/Number of email questions/contacts from website.	Webpage was updated June 2011. 129 webpage hits during FY2011.	Continue updating website as necessary and monitor webpage hits.
	Provide receptacles for plastic bags for pet waste collection.	Make receptacles available at 4 facilities where the need has been observed.					X						Reduction in pet waste observed by staff.	8 receptacles installed.	Improve measurable metric. Continue installing and maintaining pet receptacles at County parks facilities.
	Install signs reminding pet owners to pick up after their pets.	Add signs at one facility a year.					X						Reduction in pet waste observed by staff.	8 signs installed.	Improve measurable metric. Continue installing reminder signs as necessary at County Parks facilities.

PUBLIC INVOLVEMENT AND PARTICIPATION

			Responsible Dept										
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
PUBLIC INVOLVEMENT	Seek public participation in review and revision of the SWQMP.	Conduct public meetings annually to seek input on the plan.									X		Minimum of two meetings per year.	0 public meetings in FY2011	Ensure that two public meetings are held before June 30, 2012 to receive public input about storm water program.
	Seek public participation in review and revision of the SWQMP.	Maintain Stormwater Quality Information on the County website.									X		Number of visitor to stormwater quality information section of the website.	Website updated in July 2011. 129 webpage hits during FY2011.	Provide option for online public comment about SWMP on website by December 31, 2011. Monitor webpage hits and comments received.
	Comply with applicable state federal and local laws for public notice.	Compliance with laws.									X		Number of violations or complaints regarding public notice compliance.	0 violations of public notice requirements during FY2011.	Ensure that public notice requirements are fulfilled.

ILLICIT DISCHARGE DETECTION AND ELIMINATION

	BEST MANAGEMENT PRACTICE	GOAL	Responsible Dept: AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
ILLICIT DISCHARGE DETECTION AND ELIMINATION	Residential Solid Waste Collection	Continuation of curbside collection and convenience center.							X				Maintain current level of high service.	36,175 tons collected during FY2011.	Improve measurable metric.
	County Recycling Program	Include more items accepted and number of recycling participants							X				Tonnage of recycling collected.	2,436 tons recycled during FY2011.	Maintain current level of high service. Increase recycling tonnage for FY2012.
	Green Waste Recycling Program.	Provide Green waste Collection to all County residents							X				Tonnage collected.	1,327 tons collected during FY2011.	Maintain current level of high service. Increase green waste recycling tonnage for FY2012.
	Illegal dumping cleanups	Support code enforcement cleanup events and other illegal dumping cleanup efforts							X				Tonnage collected.	1,086 tons cleaned up during FY2011.	Maintain current level of high service. Increase tonnage cleaned up during FY2012.
	Increase awareness of household hazardous waste collection events.	Increase mailings/notification of collection events.		X					X				Increase volume of material collected.	500-1000 flyers are distributed in neighborhood ~2 weeks before each HHW event, including information about HHW drop-off center availability. 13,200 flyers were hand-delivered to homes during 19 neighborhood HHW events during FY2011.	Maintain current level of high service. Continue to host periodic neighborhood HHW events and distribute HHW informational brochures. Improve measurement metric.
	Enforce Illegal Dumping Ordinance.	Decrease incidents of illegal dumping.		X					X				Decrease in number of complaints of illegal dumping.	Complaints are stored in KIVA database system. No decrease seen during FY2011 relative to preceding years.	Continue monitoring public complaints about illegal dumping.
	Inspect channels	Number of miles inspected per year.						X					Number of miles/year inspected.	18.81 miles of channel were inspected	Continue channel inspections.
	Valley Utilities Project -- provide sewer connections to the South and North Valley.	Make sewer available to existing households where technically possible in the North and South Valley .								X			Number of available connections provided.	Total projects as of 2011: Completed: 5889 In design: 640 In planning: 3725	Continue phased implementation of North Valley Improvement Project to replace septic systems with sewer connections.
	Develop and maintain a system map.	Map updated annually and provided with annual reports.						X					Map updated annually.	Bernalillo County Public Works maintains a storm drainage layer within the geographic information system. Maintenance of the layer is coordinated between the Storm Drain Maintenance Section and the GIS group. Necessary updates were accomplished during FY2011.	Update storm drainage map as necessary.
	Sewer Connections/Partners in Protection of the Environment (PIPE).	Average 84 Sewer/Drinking Water Connections per year.									X		Number of Sewer/Drinking Water Connections.	Connected 30 households to the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) sanitary sewer system. Connected 43 households to the Albuquerque Bernalillo County Water Utility water system. Paid 36 sewer UEC's and 35 water UEC's. Did not pump or replace any septic systems.	Continue the County PIPE program. Maintain or increase the number of homes newly connected to sewer and water utilities.
	Household Hazardous Waste Collection Events.	To prevent the improper disposal of household hazardous waste.		X					X				Increase volume of material collected.	55,235 pounds of household hazardous waste were collected from 19 neighborhood events during FY2011 at a cost of $56,138	Continue providing periodic neighborhood HHW collection events.
	Septic System/Alternative Systems.	400 waste water permits issued annually.		X									Number of waste water permits issued annually.	216 wastewater permits issued during FY2011 (mostly repairs or replacements)	Continue monitoring the issuance of wastewater permits.

CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

	BEST MANAGEMENT PRACTICE	GOAL	Responsible Dept									MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
			AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP			
CONTSTRUCTION SITE RUNOFF CONTROL	Assist PW in identifying problems with construction phase BMPs.	BPZ inspectors to notify PWD inspectors of potential construction phase BMP compliance issues.										X	Number of contacts to PWD per number of sites.	0 notifications were provided by ZBP inspectors to PWD regarding construction site issues.	Conduct training for ZBP and PWD inspectors before June 30, 2012.
	Implement Construction NPDES Phase II Requirements by Ordinance.	Revise existing ordinance.								X			Ordinance is revised.	Ordinance was revised in 2004 to incorporate storm water quality requirements.	Revise ordinance by June 30, 2012 to include enforceable illicit discharge prohibition.
	Implement Post Construction NPDES Phase II Requirements by Ordinance.	Revise existing ordinance.								X			Ordinance is revised.	Ordinance was revised in 2004 to incorporate storm water quality requirements.	Revise ordinance by June 30, 2012 to include enforceable illicit discharge prohibition.
	Inspection of one-acre or larger disturbed areas.	Inspect projects with one acre disturbed area intermittently during construction and at completion for proper installation of post construction BMPs.								X			Number of inspections and the number of problems identified.	# of SWPPP permits for FY2011: 16 permits; # of inspections: 24; # of problems: 1	Continue construction site inspections, at least once per year for every site with an approved SWPPP.
	Train inspectors in proper installation of construction phase BMPs.	Train Public Works inspectors annually on an as needed basis.								X	X		Percentage of inspectors trained annually.	No trainings in FY2011, but 2 workshops in Nov 2009 provided training to 39 BC engineers and inspectors.	Conduct training for inspectors before June 30, 2012
	Train contractors in installation of construction phase BMPs.	Offer one training per year to contractors.								X	X		Number of trainings per year.	No trainings during FY2011	Conduct training for inspectors before June 30, 2012
	Hold workshops for County design engineers on construction and post construction BMPs.	Train engineers annually on an as needed basis.								X	X		Percentage of engineers and EITs trained annually.	No trainings in FY2011, but 2 workshops in Nov 2009 provided training to 39 BC engineers and inspectors.	Conduct training for inspectors before June 30, 2012
	Hold workshops with consultant design engineers on construction and post construction BMPs.	Conduct one training per year to design engineers and contractors.								X	X		Number of trainings per year.	DR: Arid LID Workshop held in March 2011. 150 attendees, including consulting engineers and architects.	Work with Watershed Management Group (Tucson, AZ) to hold regional Arid LID Conference in March 2012.
	Ensure compliance of County construction projects with one acre or greater disturbed area.	Inspect projects with one acre or greater disturbed area periodically during construction for proper installation of BMPs.								X			Number of problems identified per project.	# of SWPPP permits for FY2011: 16 permits; # of inspections: 24; # of problems: 1	Continue construction site inspections, at least once per year for every site with an approved SWPPP.
	Incorporate post construction BMPs into design and construction of County facilities, one acre or greater disturbed area.	Develop design standards for County projects.								X			Incorporate appropriate BMPs into all County design requirements.	No design review requirements were developed to include BMPs during FY2011.	City DPM is under revision to incorporate LID techniques. Work with City planning to complete revision.

POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

			Responsible Dept											
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
POST-CONTSTRUCTION RUNOFF CONTROL	Promote/encourage cluster development.	Use existing subdivision ordinance to allow for cluster development and increase number of cluster developments by 20%.										X	Percentage increase in cluster development.	To date, there have not been any zoning submittals for cluster development.	Continue monitoring zoning submittals.
	Promote/encourage development to reduce impervious cover.	Allow variances for certain roadway standards to reduce impervious cover.										X	Number of variances granted.	For FY 2011, 20 variances for the reduction of roadway with have been approved	Continue to consider variance requests for reduce roadway widths.
	Base drainage impact fees on amount of impervious surface.	Reduce impervious cover. Diminished disturbed areas.										X	Reduction in drainage impact fees per project.	For 2011 there has been an overall increase in impact fees for drainage. To date, for 2011 the drain impact fee collection $78,553.88; for FY2010 the figure was $64,323.42 FY2011 -	Continue monitoring reductions in impact fees.
	Utilize Transfer of Development Rights.	Amend the Zoning Ordinance to include TDR criteria.										X	Development and implementation of a TDR ordinance.	There has not been movement of a TDR ordinance for 2011.	Pursue amendment of the Zoning Ordinance to include TDR criteria.
	Encourage development within existing neighborhood and commercial nodes.	Adopt plans and policies which encourage utilization of existing commercial and residential infrastructure in identified areas.										X	Evaluate nodal areas as defined by the plans.	In November of 2011 the Bridge Corridor Plan was Approved. This plan includes recommendation and standards for development and redevelopment of property in nodal areas along the Bridge Boulevard Corridor.	Improve measurable metric. Continue evaluating nodal area plans.
	Support/adopt low density residential planning areas where appropriate.	Adopt large lot zoning.										X	Evaluate level of development (dwelling units per acre).	Bernalillo County has maintained existing levels of low density zoning for 2011	Improve measurable metric. Continue evaluating low density development requests.

POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

			Responsible Dept												
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
MUNICIPAL GOOD HOUSEKEEPING AND POLLUTION PREVENTION	Facility Management will notify the appropriate department when they observe problems or potential problems around the exterior of buildings they maintain.	Reduce stormwater quality concerns by identifying and correcting problems or potential problems.			X								Number of work orders requested and corrected.	No notifications during FY2011	Conduct training for Fleet Management personnel before December 31, 2012.
	Mow the shoulders of the roads instead of grading.	Reduce the amount of disturbed area on roadways where vegetation exists by increasing the number of road miles mown from 200 to 300.				X							Number of miles mown.	We mowed 308 miles in FY 2011	Continue mowing roadways instead of grading; increase mileage mowed.
	Cover road salt storage areas in the urbanized area.	Keep salt dry and out of surface and/or groundwater.				X							Construct a cover for the facilities.	All piles were covered with tarps at the end of FY2011.	O&M will move the salt and sand/salt mix at the end of the season to covered storage. This will cut down on satellite piles that are tarped, until more covered storage facilities can be purchased.
	Clean Roadways	Sweep 75 miles of Roadway quarterly				X							Number of road miles swept	515 Miles Swept in 2011	Continue sweeping program; increase mileage.
	Inspect channels	Inspect 18 miles of channel per year.						X					Number of miles/year inspected.	18.81 miles of channel were inspected	Continue channel inspection program.
	Clean and Reshape Channels.	Remove 600 cubic yards (c.u.) of debris per year.						X					Cubic yards per year of debris removed, or documentation that removal was not required.	1,096 cuyds of debris were removed from channels.	Continue channel cleaning program.
	Inspect and Clean Storm Water Ponds.	Remove 600 cubic yards of debris from storm water ponds annually.						X					Cubic yards per year of debris removed, or documentation that removal was not required.	793 cuyds of debris were removed from storm water ponds.	Continue pond cleaning program.
	Inspect and Clean Storm Inlet/Outlet Structures.	Inspect and clean 705 structures per year.						X					Number of structures inspected and cleaned per year.	1,344 structures were inspected and cleaned.	Continue structures inspection program.
	Inspect Storm Sewers -- to inspect integrity of the system and also identify any dry weather flows.	Inspect 16 miles of storm sewer per year.						X					Miles per year inspected and dry weather flows identified.	22.97 miles of storm sewer pipe were inspected.	Continue sewer inspection program.
	Clean Storm Sewer Lines	Clean 16,800 feet of storm sewer per year.						X					Number of feet of storm sewer cleaned per year.	29,042 feet of storm sewer were cleaned.	Continue sewer cleaning program.
	Inspect Culverts	Inspect 900 culverts every year.						X					Number of culverts inspected per year.	1,430 culverts were inspected.	Continue culvert inspection program.
	Clean/Flush Culverts	Clean and flush 225 culverts per year.						X					Number of culverts cleaned and flushed per year.	253 culverts were cleaned.	Continue culvert cleaning program.
	Storm Water Lift Station Maintenance	Spend 240 hours per year maintaining storm water lift stations.						X					Number of hours per year spent maintaining lift stations.	402 hours were spent maintaining lift stations.	Continue lift station maintenance program.
	Mow Ponds and Channels	Mow 140 acres per year in storm drainage ponds and channels.						X					Number of acres mowed per year.	104.1 acres were mowed. Lack of rain resulted in less growth of vegetation and less demand for mowing.	Continue mowing program.
	Training in appropriate safety, best management practices, regulations and other area as needed.	40 hours per year.					X						Hours of training per staff member.	30 hours or training per employee	Increase number of training hours per employee to achieve 40 hours per year per employee.
	Construct/Maintain a containment area for vactor truck debris.	Contain 10 to 20 loads per quarter for disposal.						X					Loads contained for removal.	24 loads were removed from containment area.	Continue load containment and removal program. Investigate improvements to containment area.
	Spills on shop floors captured using dry chemicals and stored in collection containers.	Prevent runoff of water and petroleum-based products by review of procedures and daily observation.			X								Number of incidents of runoff noted.	Zero incidents of runoff were reported to the BC Water Resources Program during FY2011.	Provide training for Fleet Management personnel before June 30, 2012 to improve reporting.

POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS (CONT.)

			Responsible Dept												
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
MUNICIPAL GOOD HOUSEKEEPING AND POLLUTION PREVENTION	Used oils are captured and recycled	Recycle 100% of used motor oil.			X								Annual vendor cost for recycling 100% of used motor oil	Thermofluids is the vendor that picks up the following: Used Antifreeze costs 0.65 a gallon to remove Crushed oil filters costs $60 per drum Used oil is picked up for no charge	Continue recycling program for used oil, filters and coolant.
	All used antifreeze is captured and recycled.	Recycle 100% of used antifreeze.			X								Annual vendor cost for recycling 100% of used antifreeze		
	All oil filters are drained, crushed and metal is recycled	Recycle 100% of used oil filters			X								Annual vendor cost for recycling 100% of used oil filters		
	On site drainage traps are maintained and pumped	Traps will be cleaned			X								Clean traps three times per year	Traps have never been pumped, but are snaked as needed to unplug lines.	Initiate drainage trap inspection and cleaning schedule before December 31, 2011.
	Parts cleaners are reusable/recycled fluids	Continue to use water based parts cleaners			X								Annual vendor cost for purchasing water based parts-cleaners	Fleet Management uses water-based brake cleaner from Western Refining at a cost of $393.94 a drum	Continue using water-based cleaning solutions.
	Staff are reviewed annually on use of hazardous chemicals and environmental practices.	100% of involved staff reviewed annually.			X								Documentation of review of staff	Not done, no one assigned responsibility.	Clarify employee review responsibility and initiate documented employee review program before December 31, 2011.
	Storm Water Quality Structural BMPs.	Identify priorities and Install structural BMPs for stormwater facilities and County property.								X	X		Number of projects identified, and the number constructed.	Engineering evaluation of BMPs applicable to BC storm facilities was completed by consultant in FY2011.	Construct at least one of the BMPs identified in the engineering evaluation before June 30, 21012.
	Reduce fertilizer applications on park facilities.	Reduce fertilizer usage by 10%.					X						Reduction in fertilizer per acre/number of times per year applied.	Fertilizer applications have not been reduced, but we are fertilizing based on soil testing which would provide only the amount needed which would reduce waste.	Revise measurable metric. Continue applying fertilizer based on soil testing.
	Use herbicides with short residual life at lowest effective concentration.	Use appropriate herbicides.					X						Verify that herbicides are suitable for conditions through description of herbicides utilized.	Herbicides are utilized based on the label and target pest.	Continue using herbicides according to product label.
	Move sprinkler heads away from curbs.	Reduce water usage and runoff from irrigation systems.					X						Move sprinklers at two facilities a year.	Assessors Office and MATS Facility have been retrofitted	Investigate possible retrofits for additional County facilities before June 30, 2012.
	Put paths around perimeter of parks to reduce runoff to street.	Reduce water usage and runoff from irrigation systems.					X						Install paths at a total of seven parks, one facility every year.	None	Investigate options for installing paths at County park facilities before June 30, 2012.
	Install low water use landscaping where appropriate.	Install xeriscape landscaping around parks and recreation facilities where appropriate.					X						Number of facilities where xeriscape is added/installed. The goal is three facilities in the next five years.	Xeriscaping was installed at MATS Facility and at Tijeras Library by Water Resources Program staff.	Investigate installation of xeriscapes at other County facilities.
	Educate employees in plant science so that plants are cared for properly, without excess fertilizer or water.	Seminar training for 100% of involved employees.					X						Annual training of all full-time employees through TVI program.	We have had 14 employees attending classes at CNM, in addition one staff member is an instructor at the CNM landscaping program	Increase employee training to 100% by June 30, 2012.
	Reduce turf areas where appropriate	Reduce runoff from irrigation systems by replacing turf areas with xeriscape.					X						Number of square feet converted to xeriscape from irrigated turf.	Approximately 9000 square feet have been converted between MATTS and the Assessors	Investigate conversion of turf to xeriscape at other County facilities.
	Use short (syringe) cycles of watering instead of heavier water programs to eliminate runoff into streets and arroyos.	Reduce runoff from irrigation systems to less than three events per facility per year.					X						Number of runoff events reported at the facility by the public or by staff.	We have had no reports of vagrant water this year	Continue water conservative irrigation practices.
	Use reduced pressure on irrigation system to reduce over-spray and misting.	Reduce runoff from irrigation systems to less than three events per facility.					X						Number of runoff events reported at the facility by the public or by staff.	We have had no reports of vagrant water this year	Continue water conservative irrigation practices.

POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS (CONT.)

			Responsible Dept												
	BEST MANAGEMENT PRACTICE	GOAL	AC	EH	FFM	O&M	PR	SD	SW	TS	WR	ZBP	MEASUREMENT	FY2011 Update	FY2012 Improvements/Follow-up
MUNICIPAL GOOD HOUSEKEEPING AND POLLUTION PREVENTION	Provide training and orientation to new employees through an employee handbook.	Increase employee awareness of best management practices and other job requirements.					X						Develop and distribute orientation packet to new employees.	We are in the process of devolving an SOP book.	Complete development of SOP and train personnel before June 30, 2012.
	Train employees in irrigation repair, installation and operation.	Seminar training for 100% of full-time employees.					X						Annual training of all involved employees through TVI program.	We are instructing on irrigation both internally as well as bringing in trainers.	Increase employee training to 100% by June 30, 2012.
	Utilize licensed journeymen irrigation specialists when appropriate.	Ensure that qualified staff are overseeing the irrigation systems.					X						All supervisors must have JMS-6 license.	All supervisors and assistants have JS licenses	Maintain JMS-6 licenses for all supervisors.
	Provide additional trash containers at park facilities.	Keep trash off of the grounds, roadways and drainage facilities by providing 18 additional trash containers per year.					X						New containers provided, and tonnage of trash collected.	New containers have been provided as needed. We do not track tonnage.	Continue providing container as needed. Revise measurable metric to track cubic yards collected.
	Install enclosed trash containers.	Keep trash off of the grounds, roadways and drainage facilities, by providing 5 new garbage containers that are inaccessible to dogs and storm events per year.					X						New containers provided, and tonnage of trash collected.	10 new containers as well as enclosing dumpster at Raymond G. Sanchez C.C.	Continue providing containers as needed. Revise measurable metric to track cubic yards collected.
	Pick up trash daily from park facilities.	Keep trash off of the grounds, roadways and drainage areas by collecting trash from facilities daily, and monitoring the volume of trash collected.					X						Tonnage of trash collected.	This is not tracked	Continue providing containers as needed. Revise measurable metric to track cubic yards collected.
	Improve grades on turf areas to eliminate runoff into streets and arroyos.	Retrofit turf areas where needed to reduce runoff.					X						One retrofit a year	MATTS and Assessors have been retrofitted.	Investigate conversion of turf to xeriscape at other County facilities.
	Install silt boxes and cobblestone at runoff exits into arroyos.	Reduce runoff at facilities that drain to arroyos.					X						Complete the two required retrofits.	Los Vecinos has been retrofitted with a French drain utilizing cobble stone.	Investigate retrofits at other County facilities.
	License/certify employees in 3-B herbicide spraying, including sprayer calibration, solutions and concentrations, laws and ethics through Dept of Ag. Program.	Ensure that 75% of involved full-time employees are fully trained in proper pesticide use.					X						Certify 90% of staff that might be involved in herbicide application annually.	31 employees (84 %) currently possess an applicators license.	Increase training to achieve 90% certification of employees by June 30, 2012

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APPENDIX B

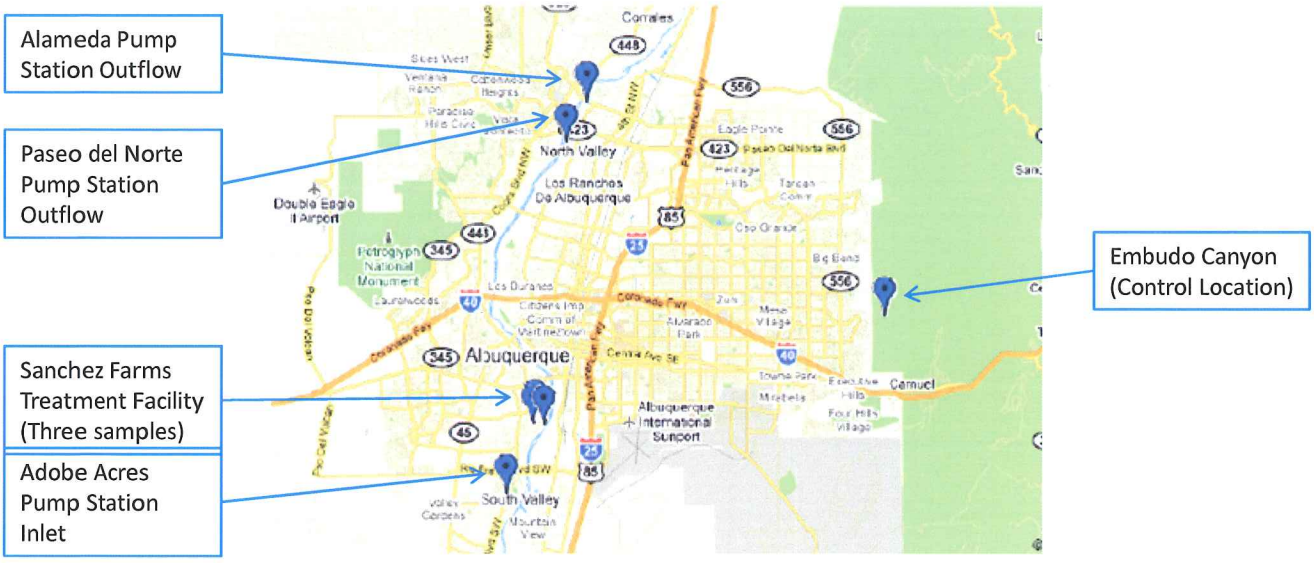
STORM WATER QUALITY MONITORING RESULTS

Note: Results for BOD and COD are presented for the sampling period 2004-2011. All BOD and COD results are expressed in mg/L.

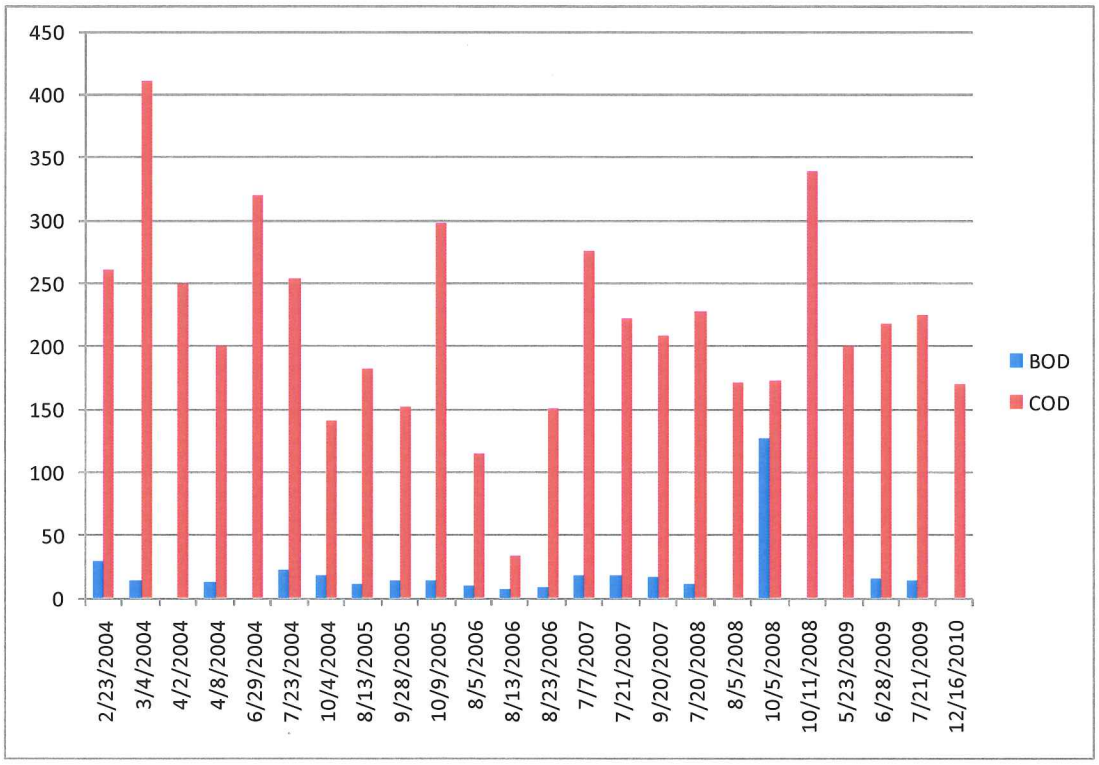
Note: Results for E. coli are presented for the sampling period 2009-2011 because of concerns about the analytical methodology employed by the laboratory prior to 2009. All E. coli results are presented in MPN/100mL.

Note: Results for PCB are presented for sampling dates 06/09/2010 and 04/19/2011. All PCB results are presented in pg/dry g of sediment.

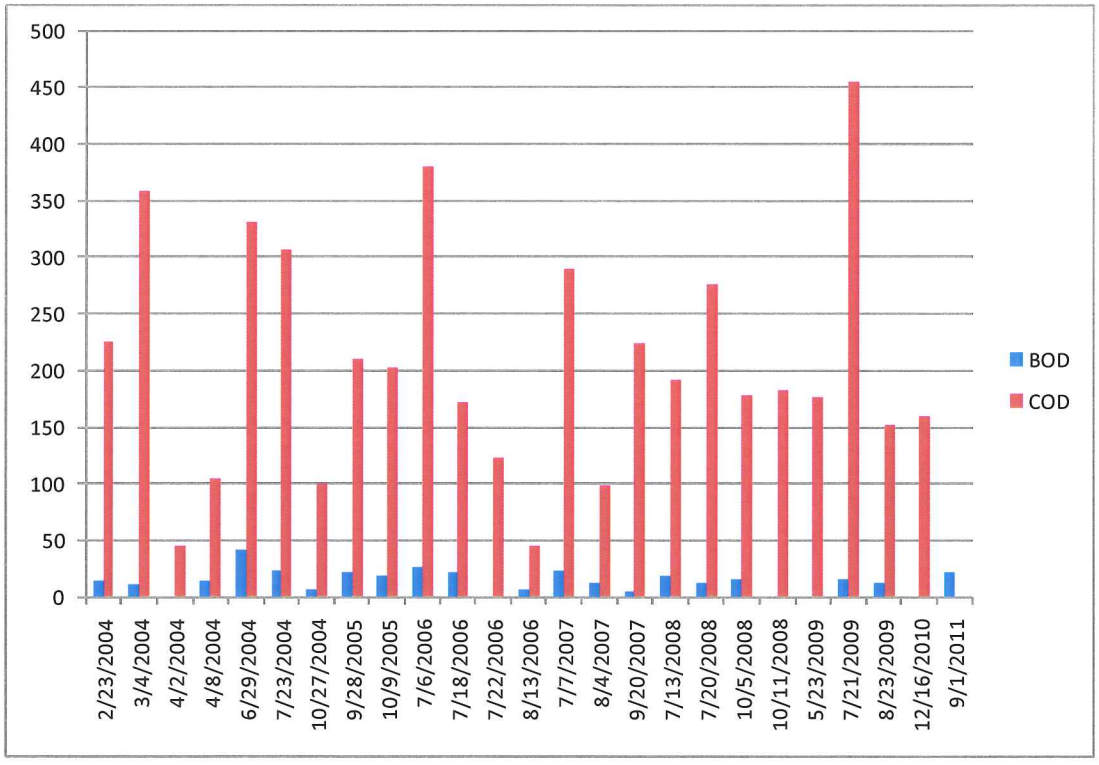
Bernalillo County Storm Water Monitoring Locations



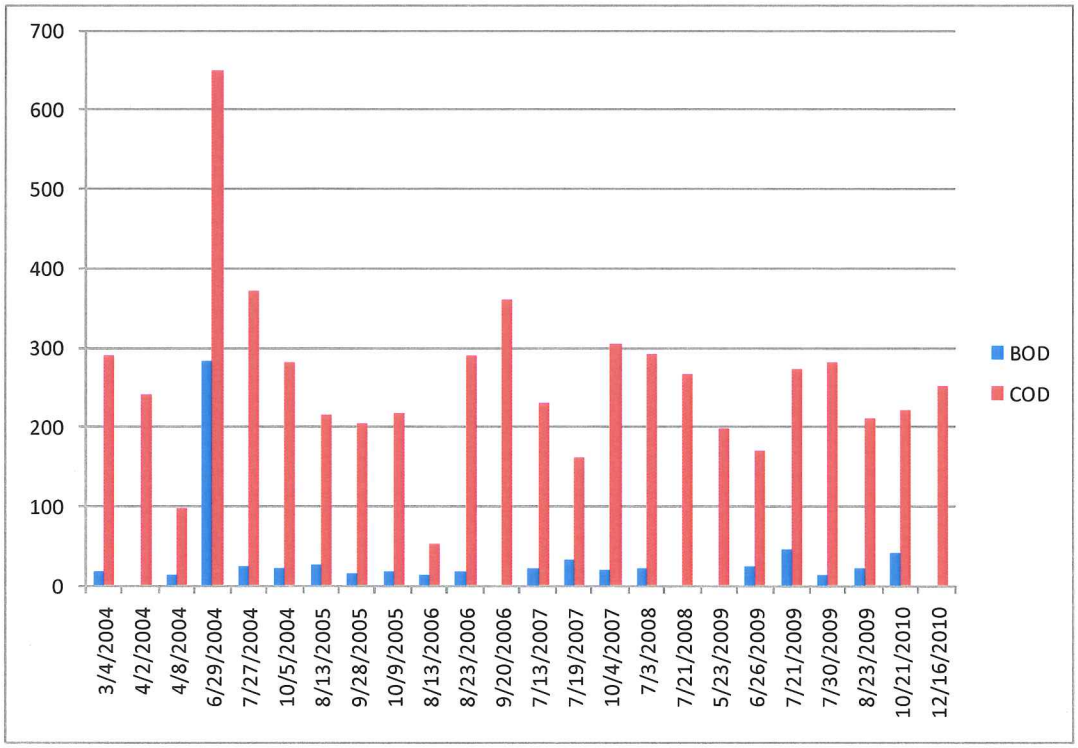
BOD & COD (mg/L): Alameda Stormwater Pump Station Outfall (2004 ff.)



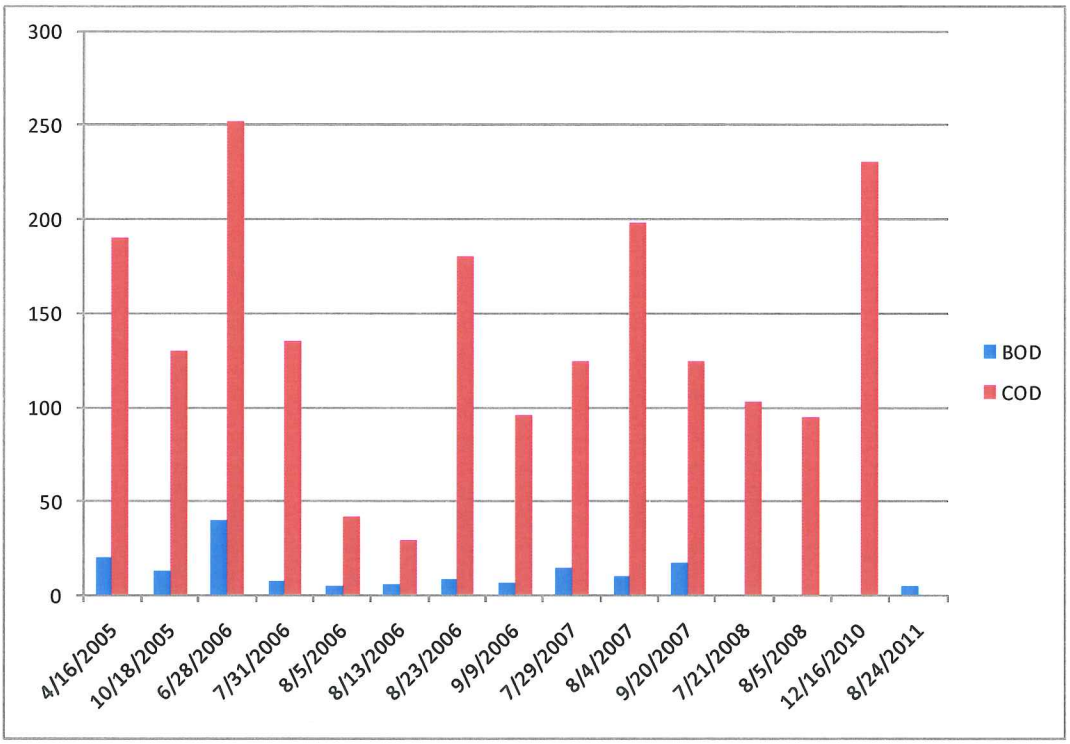
BOD & COD (mg/L): Paseo del Norte Stormwater Pump Station Outfall (2004 ff.)



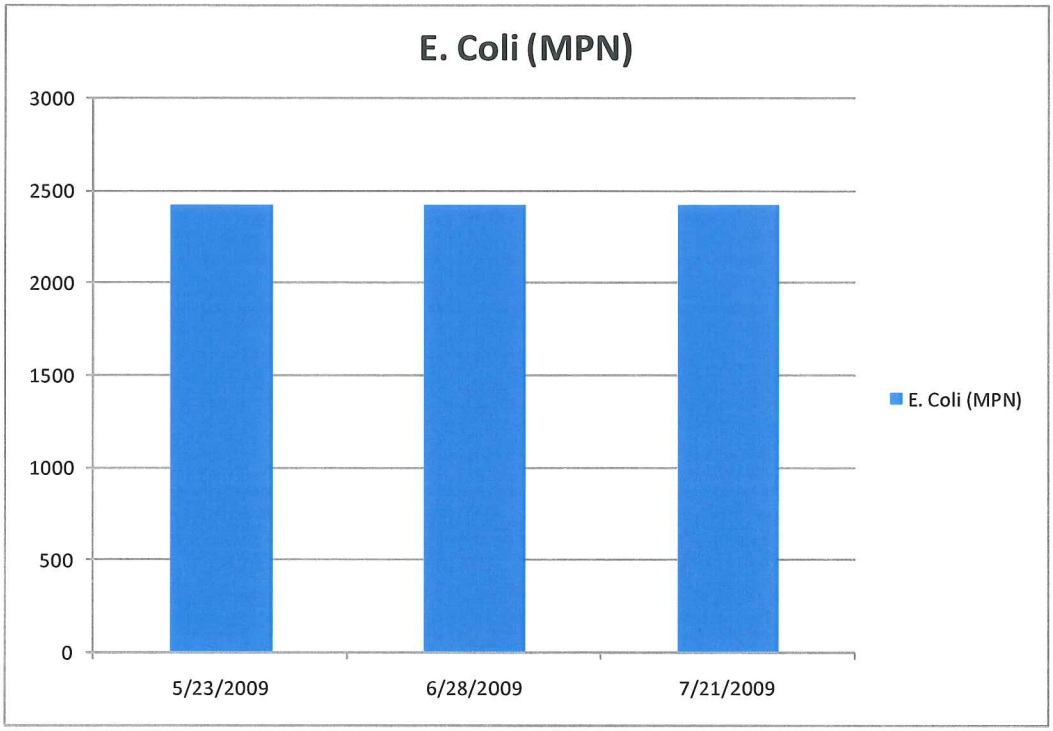
BOD & COD (mg/L): Adobe Acres Stormwater Pump Station Outfall (2004 ff.)



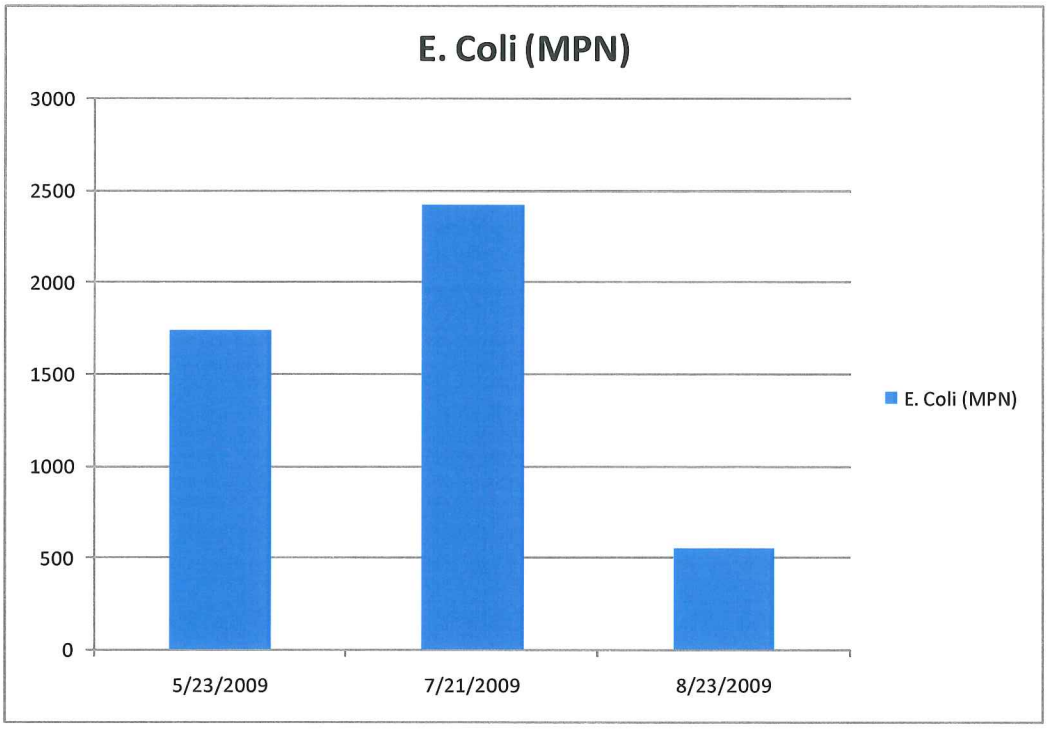
BOD & COD (mg/L): Sanchez Farm Stormwater Pump Station Outfall (2004 ff.)



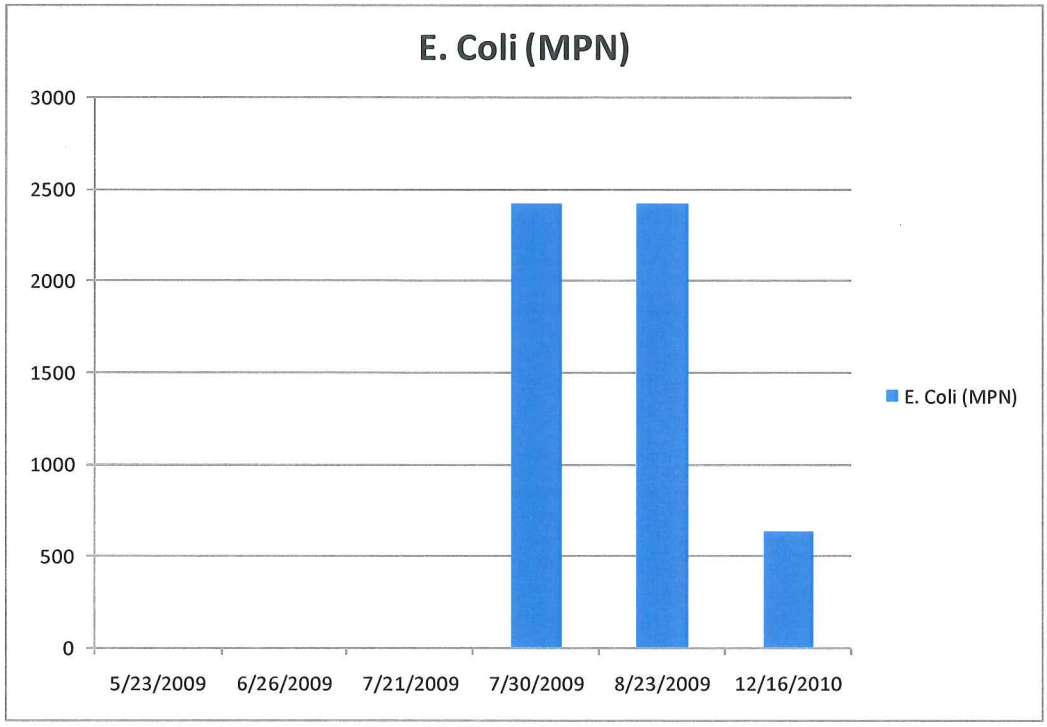
E. Coli (MPN/100mL): Alameda Stormwater Pump Station Outfall (2009 ff.)



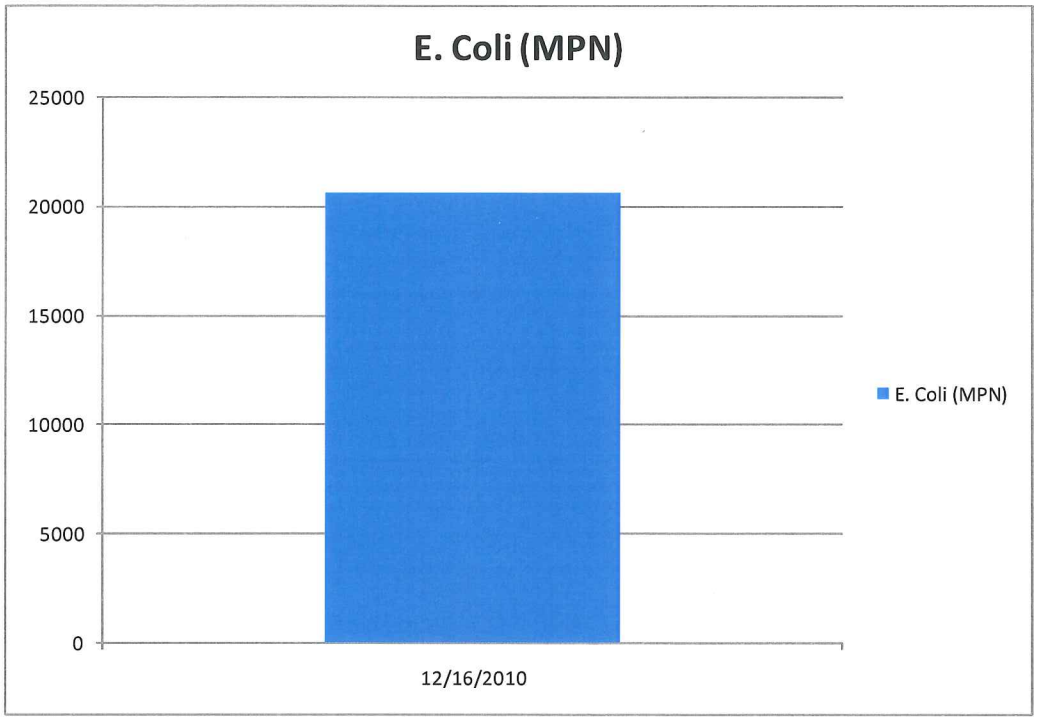
E. Coli (MPN/100mL): Paseo del Norte Stormwater Pump Station Outfall (2009 ff.)



E. Coli (MPN/100mL): Adobe Acres Stormwater Pump Station Outfall (2009 ff.)



E. Coli (MPN/100mL): Sanchez Farm Stormwater Pump Station Outfall (2009 ff.)



PCB (pg/dry g) in Storm Water Sediments

Year	Location	PCB (pg/dry g)
2010	Adobe Acres Inflow	62,704
2010	Paseo del Norte Outflow	23,500
2010	Alameda Outflow	57,998
2010	Sanchez Farm Inlet Structure	597,846
2010	Sanchez Farm Wetland	11,212
2010	Sanchez Farm Outflow	12,466
2011	Sanchez Farm Collector	1,128,256
2011	Sanchez Farm Wetland	24,640
2011	Sanchez Farm Outflow	9,639

Computed PCB (pg/L) in Storm Water

Sample Location	PCB in Sediment (pg/dry g)	Average TSS (mg/L)	PCB in Water (pg/L)
BC: Adobe Acres Inflow	62,704	670‡	42,012†
BC: Alameda Outflow	57,998	526‡	30,057†
BC: Paseo del Norte Outflow	23,500	678‡	15,993†
BC: Sanchez Farms Outflow☺	11,052	149‡	1,647†

‡ Average TSS for stormwater outflows was determined from 2004-2009 sampling history
† PCB concentration in water was computed from PCB in sediment and average TSS
☺ Sanchez Farms outflow follows treatment by sedimentation and wetlands

Comparative Stormwater Quality at Sanchez Farm vs. Adobe Acres
(Mean Concentrations 2004-2011)

Pollutant	Adobe Acres	Sanchez Farm	% Difference
TSS	670 mg/L	149 mg/L	78%
BOD	36 mg/L	12 mg/L	67%
COD	255 mg/L	138 mg/L	46%
Nitrate	1.0 mg/L	0.44 mg/L	56%
Ammonia	0.74 mg/L	<0.5 mg/L	>32%
Phosphorus	0.75 mg/L	0.39 mg/L	48%
Lead	31.2 µg/L	19.3 µg/L	38%

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APPENDIX C

STORM WATER QUALITY MONITORING AND ASSESSMENT PLAN

JOINT FUNDING AGREEMENT NO. 11CRNM000000019 BETWEEN

BERNALILLO COUNTY, NEW MEXICO PUBLIC WORKS DIVISION (Water Quality Monitoring Program)

AND THE

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION NEW MEXICO DISTRICT

Final Version

July 1, 2011 THROUGH June 30, 2012

INTRODUCTION

Accurate hydrologic data is an important element of implementing Bernalillo County's storm water quality management program. With this in mind, the U.S. Geological Survey (USGS), in cooperation with the Bernalillo County Public Works Division, began collecting water-quality samples from four selected pump stations in the County's designated urban area in fiscal year 2004. Since then, the program has continued uninterrupted and will do so through fiscal year 2012 (July 1, 2011 to June 30, 2012). Since fiscal year 2008, precipitation data has also been recorded at four rain gages, one in each of the four sampled watersheds. The same precipitation data collection will continue in fiscal year 2012. This cooperative program is reviewed and revised annually and can be easily amended during the fiscal year. The funding for each portion of the program is summarized in Table 1.

Table 1 -- WATER QUALITY COOPERATIVE PROGRAM FUNDING FOR 2012 FISCAL YEAR

(July 1, 2011 - June 30, 2012) with Bernalillo County Public Works Division					
WORK ITEM	No. of Items	Cost per Item	TOTAL COST	USGS COST	COUNTY COST
1. Water Sample Collection (2@each of 4 sites) (includes "dry runs", equipment & vehicles)	8	$2,150	$17,200	$8,000	$9,200
2. Lab Samples Preparation (incl. Lab Supplies)	8	$1,550	$12,400	$6,000	$6,400
3. Pump Sampler Maintenance and Annual Equipment Blanks for 4 existing sites	4	$2,200	$8,800	$4,000	$4,800
4. Crest-Stage Gage at mouth of Paseo Pump Outfall	**Removed in FY2012**	$3,180	$0	$ 0	$0
5. Recording Rain Gages and Data Management	4	$3,180	$12,720	$6,000	$6,720
6. Lab analyses at USGS National Water Quality Lab	8	$490	$3,920	$500	$3,420
7. GSA Vehicle and Office Facilities Overhead @ 13%	1	$7,160	$7,160	$ 0	$7,160
TOTAL FOR WORK ITEMS			**$62,200**	**$24,500**	**$37,700**

PURPOSE AND OBJECTIVES OF STUDY

The purpose of this study is to collect water-quality samples from four selected pump stations: Paseo del Norte and Alameda pump stations in the North Valley of Bernalillo County and Adobe Acres and Sanchez Farms pump stations in the South Valley. Storm flows along selected roads or low-lying areas are collected by a storm sewer network which terminate at each of the pump station sumps. The water is then pumped to the Rio Grande, or to a canal. Two storm samples from each of the four sites will be collected during the time period of this agreement. All drainage basins represent urban residential settings near high traffic areas. Samples collected are intended to provide Bernalillo County with background concentrations as part of the implemention of their storm water quality management program.

In fiscal year 2008, one recording rain gage was installed in each of the 4 sampled watersheds mentioned above. With this rainfall data and the corresponding discharge of stormwater from each pump station, a correlation could be developed between rainfall and urban runoff in each watershed. Combined with the sampling results, the correlation could then be used to estimate water quality loading to the Rio Grande per unit of rainfall in each basin. This precipitation data collection will continue unchanged for fiscal year 2012. No reliable stormwater discharge measurements are currently available from the pump stations, but with funding provided by Ciudad Soil and Water Conservation District, Bernalillo County and the USGS will install state-of-the-art flow monitoring equipment at each site in FY2012.

A crest-stage gage was installed at the mouth of the Paseo Pump outfall channel in fiscal year 2008, but will be removed in FY2012. This type of gage only records the peak stage of a flow event. Field inspections of the ½-mile-long outfall channel indicates that few pump discharges reach the Rio Grande, but seep into the sandy floodplain sediment. The addition of the crest-stage gage near the mouth of the channel has indicated which flows actually reached the river and may have affected its water quality. According to recorded high-water marks at this crest-stage gage, only one flow event, on October 5, 2008, has actually reached the Rio Grande from the Paseo Pump outfall. Locations of the 4 sampling sites, 4 rain gages, and the discontinued crest-stage gage site are shown in Figure 1 and listed in Table 2.

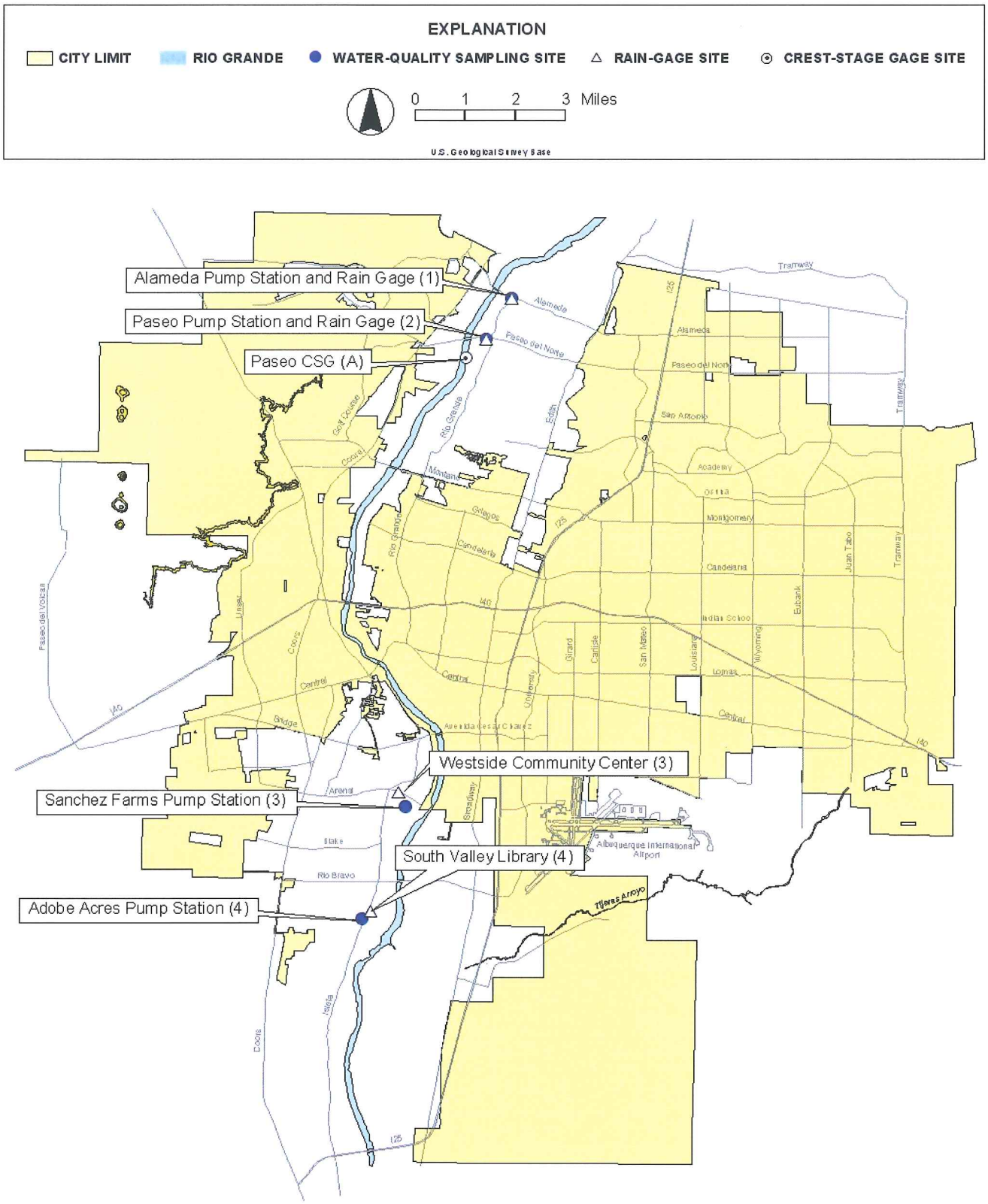

FIGURE 1. U.S. Geological Survey data-collection sites for 2012 Bernalillo County Water Quality Program.

Table 2 – Location coordinates of QW sampling and crest-stage gage sites.

Map No.	Site Name	USGS Station ID	Latitude	Longitude		
WATER QUALITY SAMPLING SITES						
1	Alameda Pump Station	351140106381210	N351140	W1063812	installed 1994	
2	Paseo Pump Station	351057106384310	N351057	W1063843	installed 1994	
3	Sanchez Farms Pump Station	350255106401510	N350255	W1064015	installed 1995	
4	Adobe Acres Pump Station	350059106410810	N350059	W1064108	installed 1994	
RAIN GAGE LOCATIONS						**Elevation**
1	Alameda Pump Rain Gage	351140106381230	N351140	W1063812	installed 7/12/07	4995
2	Paseo Pump Rain Gage	351057106384330	N351057	W1063843	installed 7/12/07	4990
3	Sanchez Farms Rain Gage (Westside Learning Center)	350310106402430	N350310	W1064024	installed 7/27/07	4940
4	Adobe Acres Rain Gage (South Valley Library)	350107106405730	N350107	W1064057	installed 7/25/07	4925

STUDY DESCRIPTION

All sampling sites are equipped with ISCO Model 6712 automatic samplers that were purchased by the County in January 2004. The Alameda, Paseo, and Adobe Acres sites have been operational since February 2004. The Sanchez Farms equipment was installed and calibrated by USGS personnel as quickly as possible after the new station was operational. The water-quality sampling equipment was operational by the end of July 2004. USGS personnel will continue to calibrate and service these four samplers throughout the 2012 fiscal year.

The suction line of the samplers draw water from the sump well when water levels reach a predetermined threshold. This threshold is based on past storm flow water levels that trigger storm pumps at each site. Only storm flow samples will be collected for this study, therefore, each sampler threshold will be set high enough to avoid the normal irrigation run-off flows or groundwater inflows to the sumps.

Should the targeted number of samples from each site not be collected due to unforseen circumstances those samples may be replaced by taking additional samples from the other sites. The USGS will contact the County and the additional samples can be agreed upon at that time.

A water sample, composed of one "grab sample" and one "composite sample" is collected during each storm event. The 1-gallon grab sample is a representation of the first flush of water that arrives at the sump reservoir. The automatic samplers will be programmed to collect this sample within the first 15 minutes of storm flows that exceed the threshold water level. As a part of the sampling effort, each grab samples will be analyzed for *E. coli* bacteria because *E. coli* has become the recreational water quality standard for the Albuquerque reach of the Rio Grande.

A "typical" pumping duration has been estimated by USGS field personnel eye-witness accounts of various storm flows at each site. This pumping duration determines an equal-time interval to collect the three 1-gallon composite jars. The time-weighted composite sample represents flows over the majority of the storm hydrograph. Obviously, the pumping duration will vary according to storm intensity and duration, however, an automated sampling interval of 15 to 20 minutes, which results in a total sampling duration of 90 to 120 miniutes, works well for the majority of storm events.

A description of the constituents associated with sample collection and analysis are listed in Table 3. Samples will be analyzed for biochemical oxygen demand (BOD) at the Hall Environmental Analysis laboratory, whereas nutrients and bacteria will be analyzed at the New Mexico State Laboratory Division. Lead (Pb), Cadmium (Cd), and Copper (Cu) plus Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Chloride (Cl), Sulfate (SO4), Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), and Hardness will be analyzed by the USGS National Water Quality Laboratory in Denver, Colorado. The USGS sampling crew will also perform field analyses of pH, Specific Conductivity, and water temperature immediately upon sample collection.

The costs for lab analyses will be billed directly from Hall Environmental and State laboratories to the County offices. The cost for constituents analyzed by the USGS lab is included in this agreement at $490 per sample, for a total of $3,920 over 8 samples. This cost includes tests for both whole water and

dissolved concentrations of copper, cadmium, and lead in each sample. Each sample will cost $1,550 for lab preparation and preservation by USGS personnel for a total of $12,400 for 8 samples. Each of the 8 field sampling "trips" is $2,150 for a total of $17,200 over 8 samples. This cost per event includes those times when personnel may be in the field anticipating a sample, but the storm flow may not be sufficient enough to exceed the sump threshold level which turn on the samplers, or an insufficient volume of water is collected by the samplers. These "dry runs" occur fairly frequently due to the localized nature of thunderstorms during our monsoon season, and require cleaning, acid rinsing, and replacing equipment even though no sample was collected. USGS staff are available on short notice and at any time of day or night to service the sampling equipment during flow events.

An equipment blank will be collected annually for quality assurance at each site after new pump tubing and collection bottles have been installed. Each blank will require flushing the sampler intake lines with ultra-pure inorganic-free blank water obtained from the New Mexico State Laboratory Division or from the USGS National Water Quality Laboratory in Denver. Each field blank will be collected in the samplers 1-gallon bottles or at the pump discharge tubing to isolate any contamination, prepared for the laboratory, and preserved as would storm runoff samples. This process not only involves the same procedures as a sample lab preparation and preservation, but also involves more field collection time by USGS personnel. A charge of $2,200 for each site includes one QA/QC equipment blank and pump sampler maintenance because during the fiscal year, the equipment occasionally requires re-calibration and cleaning. Decontaminated peristaltic pump tubing and bottles are also replaced after each sampling event. The decontamination process involves washing with liquinox soap, rinsing with deionized water, then soaking in dilute hydrochloric acid to remove trace metal residue, and finally double rinsing with deionized water before storing in sealed plastic bags.

All 4 recording rain gages are tipping-bucket type. Rainfall data are collected in 5-minute time intervals to provide data for water quality constituent loading calculations and rainfall/runoff modeling. The data is transferred from field recorders to the USGS database approximately every 2 months. The data is available in 5-minute increments for intensity calculations or as daily totals. Gages are calibrated each year to ensure accurate readings. The data will be transmitted electronically to Bernalillo County Public Works staff biannually.

No summary report is planned, however, a brief summary of completed work items will be provided at least three times during the fiscal year for County billing purposes. All laboratory analyses will be provided to the County as it becomes available from the City and State laboratories.

Table 3.--LISTING OF WATER-QUALITY CONSTITUENTS ANALYZED FROM STORM SAMPLES

ANALYSIS BY HALL ENVIRONMENTAL LAB

General Chemistry
BOD (Biochemical Oxygen Demand)

ANALYSES BY NEW MEXICO STATE LABORATORY DIVISION

Nutrients
PHOSPHORUS, TOTAL AND DISSOLV.
KJELDAHL NITROGEN, TOTAL (TKN)
(in Whole Water and Dissolved)
NH3 (AMMONIA), TOTAL AND DISSOLV.
NO2 + NO3 (NITRITE AND NITRATE), TOTAL
(in Whole Water and Dissolved)
TOTAL NITROGEN = TKN + (NO2+NO3)

Bacteriology
E-COLI (MPN/100 ml Quantitray method)

FIELD ANALYSES BY USGS PERSONNEL

TEMPERATURE
pH
SPECIFIC CONDUCTIVITY

ANALYSES BY USGS LABORATORY IN DENVER, COLORADO (began in 2011)

CADMIUM (Cd), TOTAL AND DISSOLV.
COPPER (Cu), TOTAL AND DISSOLV.
LEAD (PB), TOTAL AND DISSOLV.
TOTAL DISSOLVED SOLIDS (TDS)
TOTAL SUSPENDED SOLIDS (TSS)
HARDNESS
COD (Chemical Oxygen Demand)
TOTAL ORGANIC CARBON (TOC)

Major Ions
CHLORIDE (CL), DISSOLV.
SULFATE (SO4), DISSOLV.

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APPENDIX D

DRAFT ILLICIT DISCHARGE ORDINANCE

CHAPTER 38. FLOODS

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ARTICLE III. STORM DRAINAGE

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DIVISION 4. WATER QUALITY PROTECTION

Sec. 38-301. Purposes and Authority.

(a) The water quality protection goals of the County are to:

(1) protect, maintain, and restore high quality chemical, physical, and biological conditions in the waters of the state within the County;

(2) reverse past trends of stream deterioration through improved water management practices;

(3) maintain physical, chemical, biological, and stream habitat conditions in County streams that support aquatic life along with appropriate recreational, water supply, and other water uses;

(4) restore County streams damaged by inadequate water management practices of the past, by reestablishing the flow regime, chemistry, physical conditions, and biological diversity of natural stream systems as closely as possible; and

(5) promote and support educational and volunteer initiatives that enhance public awareness and increase direct participation in stream stewardship and the reduction of water pollution.

(b) The federal National Pollutant Discharge Elimination System (NPDES) *Municipal Separate Storm Sewer System Permit* for New Mexico (NMR040000, July 2007) requires that the County establish an ordinance governing discharges into waters of the state within the County.

(c) The federal NPDES *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity* (May 2009) requires prevention of stormwater pollution from industrial and commercial properties within the County.

(d) The federal NPDES *General Permit for Stormwater Discharges from Construction Activities* (January 2009) requires prevention of stormwater pollution from construction sites larger than one acre within the County. Prevention of stormwater pollution from construction sites is addressed in Article III, Sec. 38-141 through Sec. 38-206.

(e) The County shall work in conjunction with municipalities, other counties, agencies of the state, and the federal government to establish interagency agreements and to take other steps as necessary to accomplish the purposes of this Part.

(f) In administering and enforcing the Part, the County may consider the economic impact of any action it takes or requires.

Sec. 38-302. Definitions.

In this Part, the following words and phrases have the following meanings:

(a) *Abatement* means cessation, removal or reduction in intensity.

(b) *Agriculture* means the business, science and art of cultivating and managing the soil, growing, harvesting, and selling sod, crops and livestock, and the products of forestry, horticulture and hydroponics; breeding or raising livestock, poultry, fish, game, and fur-bearing animals; dairying, beekeeping and similar activities.

(c) *Aquatic life* means a diverse macroinvertebrate amphibian and fish population consistent with the State-designated water use classification or the support potential of the existing stream flow, water quality, and habitat quality.

(d) *BMP (Best management practice)* means sediment and erosion control and stormwater management practices approved by the Division or agricultural runoff control practices approved by the Soil and Water Conservation District to mitigate adverse effects of land use activities, runoff, sedimentation, and nonpoint source pollution on stream bank erosion, stream hydrology, surface and groundwater replenishment.

(e) *County* means Bernalillo County.

(f) *County Commission* means the Bernalillo County Commission.

(g) *County Engineer* means the Deputy County Manager of Public Works Division or his designee. ***[Note: This definition may need to be coordinated with the definition in Sec. 38-142.]***

(h) *County Manager* means the County Manager of Bernalillo County.

(i) *Division* means the Bernalillo County Public Works Division.

(j) *Discharge* means adding, introducing, releasing, leaking, spilling, casting, throwing, or emitting any pollutant, or placing any pollutant in a location where it is likely to pollute waters of the state in the County.

(k) *Erosion* means the process by which ground surface is worn away by action of wind, water, ice, or gravity.

(l) *Groundwater* means underground water in a zone of saturation or water contained or moving among soils and sands or held within geologic formations under the ground surface.

(m) *Illicit discharge* means any discharge not permitted by an approved National Pollutant Discharge Elimination System permit, by an approved plan for compliance or that is consistent with the utilization of approved best management practices.

(n) *Industrial waste* means any liquid, gaseous, solid, slurry, or other waste substance, or any combinations of these resulting from any process or industry, manufacturing, trade or business.

(o) *MS4 (Municipal Separate Storm Sewer System)* means the system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, arroyos, ditches, manmade channels, and storm drains) owned and operated by the County. ***[Note: This definition may need to be coordinated with the definition of "storm drainage system" in Sec. 38-142.]***

(p) *Nonpoint source* means a diffuse source of pollution that does not result from a pollutant discharge at a specific single location (such as a single pipe) but generally results form human or human-induced activities which introduce pollutants into waters of the state in the County through land runoff, precipitation, atmospheric deposition, or percolation.

(q) *Person* means any individual, corporation, partnership, joint venture, agency, unincorporated association, municipality, county, state or federal agency, or any combination of them.

(r) *Plan for compliance* means a plan submitted to the County Engineer by a person who causes or permits a violation of this Part that establishes specific corrective actions to be taken and dates by which each action shall be completed to mitigate the impacts of the violation.

(s) *Point source* means any discernable confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, form which any pollutant is or may be discharged.

(t) *Pollutant* means any liquid, gaseous, solid, radioactive, hazardous, or other substance that, when discharged in the County as a point source or nonpoint source, or when applied to or stored on natural or man-made land surfaces, subsurface, or other surfaces connected to these surfaces in a manner other than as authorized by applicable permits, regulations, or manufacturer's instructions, has potential to or does:

(1) interfere with state designated water uses;

(2) obstruct or cause damage to waters of the state within the County;

(3) change water color, odor, or usability as a drinking water source through causes not attributable to natural stream processes affecting surface water or subsurface processes affecting groundwater;

(4) add an unnatural surface film on the water;

(5) adversely change other chemical, biological, thermal, or physical conditions, in any surface water or stream channel;

(6) degrade the quality of ground water; or

(7) harm human life, aquatic life, or terrestrial plant and wildlife.

Pollutant includes, but is not limited to, dredged soil, solid waste, incinerator residue, garbage, wastewater, wastewater sludge, chemical waste, biological materials, radioactive materials, rock, sand, dust, industrial waste, sediment, nutrients, toxic substance, pesticide, herbicide, trace metal, automotive fluid, petroleum-based substance, and oxygen-demanding material.

(u) *Pollute* means to discharge pollutants into waters of the state in the County.

(v) *Pollution* means the direct or indirect distribution of pollutants into waters of this state in the County.

(w) *Restore* means to re-create, where feasible, stable aquatic habitat conditions with the goal of supporting balanced indigenous communities in surface waters that have been damaged by excessive or inadequately controlled stormwater flows and nonpoint source pollution

discharges from upland watershed development.

(x) *Sediment* means soils or other particulate materials eroded or otherwise separated by parent materials and transported or deposited by the action of wind, water, ice, or gravity or by illegal dumping.

(y) *Sedimentation* means the action or process of forming or depositing sediment in a manner which adversely impacts the physical and biological diversity of arroyos, wetlands and waters of the state in the County.

(z) *Soil and Water Conservation District* means the Ciudad Soil and Water Conservation District.

(aa) *Stream channel* means a part of a water course either naturally or artificially created which contains an intermittent or perennial base flow of groundwater origin.

(bb) *State designated water uses* means uses specified in the New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC).

(cc) *Surface waters* means all waters of the state other than groundwater, which include ponds, lakes, rivers, streams, wetlands, ditches, and public drainage systems except those designed and used to collect, convey, or dispose of sanitary sewage.

(dd) *Toxic substance* means any liquid, gaseous, or solid substance in a concentration which, when applied to, discharged to, or deposited in waters of the state within the County, may, in the judgment of the Division exert a detrimental effect on humans or on the propagation, cultivation, or conservation of terrestrial or aquatic life.

(ee) *Waters of the state* means both surface waters and groundwater within the boundaries of the State of New Mexico and subject to its jurisdiction, as defined in 20.6.4(S)(5) NMAC and in 20.6.2.7(ZZ) NMAC, respectively.

Sec. 38-303. Administration.

The County Engineer shall administer and enforce this Part.

(a) The County Engineer shall coordinate programs relating to water pollution abatement and seek the cooperation and assistance of all County agencies, and municipalities when their programs affect the County.

(b) The County Engineer may recommend to the County Commission ordinances to establish water quality use classes and water quality standards or criteria that exceed minimum state water use classes, standards, or criteria as set forth in the New Mexico Standards for Interstate and Intrastate Surface Waters, or for other purposes necessary to administer this Part.

(c) This Part shall not waive any requirement imposed by the federal Clean Water Act (33 USC 1251 et. seq.) or by the New Mexico Water Quality Act (NMSA 74-6 1978).

Sec. 38-304. Prohibition of Water Pollution

(a) A person shall not discharge, or cause to flow from a storage system or other container, any

pollutant into the County MS4 or into any part of waters of the state within the County except in concentrations or quantities explicitly authorized by an approved NPDES discharge permit or by an approved plan for compliance, or that is consistent with the utilization of approved best management practices.

(b) A person shall not connect any apparatus discharging any pollutant, in any quantity, to the County MS4 or into any part of waters of the state within the County except as explicitly authorized by an approved NPDES discharge permit or by an approved plan for compliance, or that is consistent with the utilization of approved best management practices.

(c) A person shall not improperly store, handle, or apply any pollutant in a manner that will cause its exposure to rainfall or runoff and consequent discharge as point source pollution or nonpoint source pollution into the County MS4 or into any part of waters of the state within the County except in concentrations and quantities authorized by an approved NPDES discharge permit or by an approved plan for compliance, or that is consistent with the utilization of approved best management practices.

(d) A person shall not dispose of solid waste in violation of Chapter 70, Article II, Section 70-42 of the Bernalillo County Code such that its exposure to rainfall or runoff may result in discharge as point source pollution or nonpoint source pollution into the County MS4 or into any part of waters of the state within the County.

Sec. 38-305. Control of Water Quality.

(a) The County Engineer shall protect waters of the state in the County in accordance with designated water uses set forth in state water quality standards (20.6.4 NMAC) and state water quality regulations (20.6.2 NMAC). If the County Engineer finds that more stringent standards than those adopted by the state are necessary, such standards may be established by ordinance adopted under Section 38-303(b).

(b) The County Engineer may order:

(1) abatement of any discharge in violation of Section 38-304;

(2) abatement of any pollution of waters of the state within the County; and/or

(3) abatement of any degradation of riparian habitat and aquatic life caused by a failure to design, install, operate, or maintain sediment control, stormwater management best management practices in accordance with an approved storm water pollution prevention plan as required under Section 38-147 or a plan for compliance.

(c) If a pollutant discharge from an industrial or commercial property violates Section 38-304, the Division shall pursue abatement of these discharges by requiring a plan for compliance to be developed by the discharger and submitted for approval to the County Engineer.

(d) If a pollutant discharge from property engaged in agriculture violates Section 38-304, the Division shall pursue voluntary abatement of these discharges in cooperation with the Soil and Water Conservation District or with the New Mexico Environment Department.

(e) Non-agricultural best management practices used to comply with this Part shall be designed,

installed, operated, and maintained in accordance with storm water pollution prevention plans or plans for compliance approved by the County Engineer. Voluntary agricultural best management practices shall be designed, installed, operated, and maintained in accordance with best management practices approved by the Soil and Water Conservation District.

Sec. 38-306. Records, Reports, Sampling, and Analysis.

(a) If the County Engineer requires the owner or operator of any industrial or commercial site to prepare and implement a plan for compliance to mitigate and eliminate pollution caused by activities at the site, the County Engineer may require the owner or operator, in compliance with the plan to:
   (1) maintain records to demonstrate compliance;
   (2) prepare and file reports necessary to demonstrate compliance; and
   (3) sample and provide physical, biological, or chemical analysis of discharges by using:
   (4) a state certified laboratory ; and
   (5) sampling methods where, when and how the Division requires.

(b) Upon request of the Division, the owner or operator shall provide any records, manifests, and invoices for review. If the documents are not available at the time of the request, the owner or operator shall produce the records within the time designated by the County Engineer.

Sec. 38-307. Compliance and Enforcement.

(a) The Division may enter a site at any time during normal business hours, and at other reasonable times, to inspect, investigate, or monitor activities subject to this Part. If the person in charge of the site does not consent to any entry by the Division, the County Engineer shall obtain an administrative search warrant from a court with jurisdiction by showing that reasonable administrative standards for inspecting the site have been met.

(b) A person shall not hinder, prevent, or unreasonably refuse to permit any inspection, investigation, or monitoring under this Part.

(c) Upon finding a violation of this Part, the County Engineer may issue a notice of violation, stop order, or corrective order to any person causing or permitting the violation.

(d) If a discharge is observed that appears to represent an immediate hazard to public health or safety, or to aquatic life, the County Engineer or employees of the Bernalillo County Sheriff Department, the Bernalillo County Fire Department, and any other agent of the County designated by the County Manager, may enter and inspect any property or structure, except a dwelling, as necessary to prevent or stop the hazard.

(e) If, after an inspection, the County Engineer determines that a pollutant discharge poses an immediate hazard to the public health or to aquatic life, the County Engineer shall take action as necessary to abate the pollutant discharge, to protect the public, and to mitigate any damage that the pollutant discharge has caused to the waters of the state within the County.

(f) If a discharge presents an immediate hazard to the public health or to aquatic life, the County Engineer shall notify the responsible person by the most expeditious means, and the person so notified shall remove the illicit discharge or pollutant by the time stated in the notice.

(g) Any required plan for compliance and any amendments thereto shall be approved by the County Engineer. If the violation involves a person engaged in agriculture, a plan for compliance shall be developed under Section 38-305(d).

(h) A person who has submitted a plan for compliance that has been approved by the County Engineer is not in violation of this Part as long as the person acts in accordance with the plan for compliance.

(i) Each day a violation continues is a separate offense.

(j) The County Engineer may issue a stop work order to any person who violates this Part when performing activities authorized by a paving permit issued under Section 38-171.

(k) In addition to any other remedy allowed by law, the Division may seek injunction or other appropriate judicial relief to prevent or stop any violation of this Part, including reporting violations to the US Environmental Protection Agency for enforcement under National Pollutant Discharge Elimination System regulations (40CFR122).

Sec. 38-308. Liability for Expenses Caused by Violation.

(a) If an illicit discharge is not removed as required under Section 38-307, the Division may remove, mitigate, and clean up any illicit discharge or pollutant.

(b) The cost of removal, mitigation, and clean-up of an illicit discharge or pollutant shall be paid to the County by the person who did not remove, mitigate, and clean up the illicit discharge and pollutant, and is a debt due to the County.

(c) The cost of removal, mitigation, and clean-up is a lien upon all real property.

(d) This Part shall not restrict the Division from proceeding directly with alternative enforcement procedures under Section 38-307(k).